Health and Environmental Sciences Institute's Exposure Factors Database for Aggregate and Cumulative Risk Assessment

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In recent years, the risk analysis community has broadened its use of complex aggregate and cumulative residential exposure models (e.g., to meet the requirements of the 1996 Food Quality Protection Act). The value of these models is their ability to incorporate a range of input variables in the overall estimation of total exposure and risk to an individual person with demographic, geographic, and temporal specificity. However, a risk assessor's ability to evaluate the validity of a model outcome is predicated on a clear understanding of the quality and variability associated with these input variables. As such, the ILSI Health and Environmental Sciences Institute's (HESI) Risk Assessment Methodologies Technical Committee (RAM Committee) identified the need for better characterization and electronic availability of public, non-chemical specific data sets for use in state-of-the-science aggregate residential exposure models. As a first step, the RAM Committee, in conjunction with infoscientific.com, Inc., have reviewed public data on micro- and macro-activity factors (e.g., mouthing behavior event frequencies, time spent on a residential lawn) and mass-transfer-related factors (e.g., surface-to-skin/clothing mass transfer, biological monitoring measurements following choreographed dermal exposure events, dermal transfer coefficients, transfer removal efficiencies). These data were evaluated both qualitatively and quantitatively and organized in an electronic database with their associated meta information. The database and a guidance manual are available free to the

public. Additional data, meta information, and guidance can be added to this database in the future. This effort provides important opportunities for collaboration and synergy with the U.S. Environmental Protection Agency's (U.S. EPA) Exposure Factors Handbook (general and child-specific) and regulatory agency exposure assessment methods development (e.g., U.S. EPA, Office of Pesticide Programs, Standard Operating Procedures for Residential Exposure Assessment). Additionally, the database was shared with representatives from "ExpoFacts," the European Exposure Factors database project. The HESI RAM Technical Committee, which designed and reviewed the database, is composed of representatives from academia, industry, and government.

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